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Division of Mycology and Disease Survey

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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

VOL. XIX June 15, 1935 Number 9

THE FRUIT DISEASE SITUATION IN NORTHERN VIRGINIA

A. B. Groves

APPLE: Scab (Venturia inaequalis) is very prevalent this year, much more severe than it was in 1934 and comparable to 1933. Most of the infection took place during rains on May 2 and 3, when apples were in the late blossom stage. Ascospore discharges were heavy at that time and fungicidal protection generally at a minimum due to the time elapsed since the pink spray, which was completed by April 25 or earlier in most orchards.

The Stayman, Winesap, Delicious, and other scab-susceptible varieties are most severely affected, although there is scab to be found on York, Grimes, Ben Davis, and other more resistant varieties. Curtailment of the fungicidal spray schedule on these resistant varieties was in many cases responsible for the scab now present. As usual, Duchess shows very little scab even where unsprayed.

Blight (Bacillus amylovorus) is scarce in this section compared to previous years. Some twig blight has been observed in orchards east of the Blue Ridge, a small amount in this section. The Seckel pear, which usually blights freely, shows only an occasional twig affected to date. Blight has been decreasing in severity from the high point reached four and five years ago and is at a low point at present.

Rust (Gymnosporangium juniperi-virginianae) has been materially reduced in northern Virginia as a result of the cedar cutting campaign of the past winter. The disease is severe in a few outlying orchards, but is of minor importance generally.

Measles and allied diseases (cause undetermined) have been observed in new locations every year, two rather severe cases having been located this past winter. Internal bark necrosis on Delicious has either spread, or become conspicuous, over a large part of a third orchard which has been under observation for the past six years. Growth of the trees has been retarded, and in some cases death of the more severely affected branches has occurred.

Black root rot (Xylaria mali) continues to take a heavy toll of the older trees in many orchards. Drought injury is in many cases an important contributing factor toward death of the trees. Over 200 large trees were removed from one orchard near Winchester the past winter, most of the trees showing extensive root rot infection. Many more trees will undoubtedly be removed from the same orchard during the next few years.

PEACH: Leaf curl (Exoascus deformans) is very prevalent and severe on unsprayed peaches this year. Leaf curl has been more than usually severe the past three or four years, although damage during 1934 was somewhat less. Where proper sprays were applied the disease was readily controlled. Summer strength (1-40) lime sulphur proved sufficiently strong where used. Control was also secured after conspicuous swelling of the buds had taken place and the leaf tips were showing (experimental plots).

Bacterial spot (Bacterium pruni) has never been severe in this section, and no injury has been noted thus far this season.

REPORTS ON APPLE AND PEACH DISEASES IN KENTUCKY

W. D. Valleau (June 5)

APPLE: Scab (Venturia inaequalis). Unsprayed trees in some orchards are practically defoliated. Where liquid lime sulphur has been used regularly scab has been nearly completely controlled. One orchard in which dry lime sulphur was applied seven times has recently lost (dropped) 95 per cent of set apples from scab. Leaves in this orchard were heavily scabbed. There was three times the normal rainfall in May.

Blight (Bacillus amylovorus). Worst outbreak of fire blight of apples which has occurred in years. Trees in orchards are affected more on tops than on lower branches. Blight developed after fruit had set and begun to enlarge. Rainfall in May nearly three times normal.

PEACH: Stem canker (Phoma persicae) was observed affecting peach trees budded in 1934. Trees have made about two and one-half feet of growth. Cankers are near the ground. Several trees in a row are affected with remainder of trees unaffected. Affected areas are scattered through the planting.

FRUIT DISEASES IN TENNESSEE

Paul R. Miller

APPLE: Apple rust (Gymnosporangium juniperi-virginianae) is very abundant and widespread in all orchards of eastern Tennessee. We had very favorable weather for apple rust dissemination lasting over a period of three to four weeks. (May 29).

The varieties Delicious and Winesap were about 40 per cent affected with quince rust (G. clavipes) in a large orchard in western Tennessee (June 10).

Black rot (Physalospora obtusa) was found to be very prevalent on Transparent apples in Roane County (May 29).

QUINCE: Leaf blight (Fabraea maculata) has been general and abundant in all sections of the State visited this year (June 10).

PEACH: Brown rot (Sclerotinia fructicola) following codling moth injury was found on about 15 per cent of the peaches in a 20-acre orchard in Roane County. (May 29).

APPLE SCAB AND PEACH LEAF CURL IN WEST VIRGINIA AND OHIO

WEST VIRGINIA: This is a good year for apple scab, according to observations in several orchards in the vicinity of Martinsburg. Orchards that have been sprayed as recommended by the Spray Service do not show much scab, but there is a great deal in poorly sprayed and unsprayed orchards. The leaves in one neglected orchard examined near Martinsburg on June 1 were covered with scab to such an extent that they were turning brown and rolling and within a few weeks they will be dropping off.

Dr. E. C. Sherwood tells me that peach leaf curl has been especially prevalent in West Virginia this year. (R. J. Haskell, June 7.)

OHIO: There is a great deal of apple scab in orchards not properly sprayed. Careful commercial growers, as usual, are going to come through with a fair crop. This is also true of peach leaf curl. I believe these two diseases are as bad as in 1933.

A lot of burning has resulted from spraying scab-infected foliage. Even such low concentration as four pounds of dry lime sulphur has caused severe injury to infected leaves. (A. L. Pierstorff, June 5.)

SOME REPORTS ON RASPBERRY DISEASES

K. J. Kadow

WHITE BUD IN ILLINOIS: White bud (Glomerella rubicola). This disease has been studied under Illinois conditions for about four years to date. So far it has not caused much concern on our Latham variety, but this season about four per cent bud killing on this variety has occurred in the fields so far observed. The season is probably responsible since it has been very favorable for disease development. (May 10)

VERTICILLIUM WILT IN MISSOURI: Verticillium wilt (V. albo-atrum). A specimen sent in by H. B. Rowe from St. Louis, Missouri, was identified by actual culturing of pathogen as Verticillium wilt. Purple streaking and girdling of stems very pronounced. Internal necrosis of bundles and to some extent the pith. Extent of damage not determined. (May 22)

DISEASES OF TOMATOES AND OTHER VEGETABLES IN ILLINOIS

K. J. Kadow

TOMATO: Timber rot (Sclerotinia sclerotiorum) has occurred in many greenhouses on both tomatoes and cucumbers. Losses have varied from 5 to 75 per cent with an average of about 15 per cent on tomato and 20 per cent on cucumbers. On tomatoes the disease usually enters the stem through leaves in contact with soil. Watering as little as possible, removal of lower leaves, good ventilation and painting stems with sulphur paste all tend to reduce losses from this disease. (April and May)

Buckeye rot (Phytophthora terrestris). An outbreak of this disease in a greenhouse is probably correlated with poor watering practices during this damp cloudy spring. (June 10)

Stem-end rot (Botrytis sp.). Severe losses on tomatoes have occurred from this disease due to Botrytis sp. and the two months of damp, cloudy weather that has prevailed in Illinois. About 35 per cent rotting has occurred in greenhouses showing the disease unless the fruit has been dusted with sulphur or treated with sulphur nebulator. Rather general throughout the State this season. (April and May)

Virus diseases. About 20 per cent of all greenhouse tomatoes examined have virus symptoms in various degrees of severity. It is likely that most of the trouble is due to one or several mosaics, but judging entirely from symptoms, considerable streak is also present. In most cases the so-called streak has actually killed the infected plants. Actual losses less than 1 per cent. Damage from mosaics not determined. (May)

CUCUMBERS: Fruit rot (Botrytis sp.). This is the same Botrytis that causes stem end rot of tomatoes. Severe blossom blight has been observed on cucumbers this spring. Fruit rot is also very common. Losses range from 10 to 90 per cent with a possible average of about 25 per cent. Sulphur treatments have been tried but the results were not conclusive. Damp cloudy weather largely responsible for the serious proportions of this disease. Rather general throughout the State this season. (April and May)

RHUBARB: Mosaic (Virus, not certain). This may not be a virus disease but it has all the symptoms of a virus as described for Rhubarb (B. T. Dickson - Ann. Rep. Quebec Soc. Prot. Plants 17: 1924-25, p. 35-37). Rather general in all large plantings. After trouble appears the plantation soon runs out. (May and June)

ONION MILDEW FOUND EARLY ON TOP SET ONIONS IN NEW YORK

A. G. Newhall

The County Agent, Mr. D. M. Dalrymple, of Niagara County, sent in on May 3 specimens of "winter onions," variety not known, badly affected with Peronospora destructor (P. schleideni). The mycelium is known to perennate in the bulbs, but no record can be found among the plant disease survey cards reporting its occurrence this early in New York although Professor Whetzel states he has seen it in the spring many times.

On a subsequent inspection, it was found that these winter onions have been affected for years. One grower got tired of them years ago and sold out to the present owner who is likewise getting disgusted with them. Fortunately they are not near any muck or seeded onions or the menace to that important crop would be very great.

Further search in backyard gardens about Ithaca has revealed mildew on similar top set onions the first week in June.

BEAN AND PEA DISEASES IN SOME OF THE WESTERN STATES IN 1934

L. L. Harter and W. J. Zaumeyer

BEAN DISEASES

COLORADO: Because of the drought the crops were considerably reduced in comparison with a normal year. In spite of this, some of the diseases were fairly common and destructive. Bacterial blight (Bacterium phaseoli) did not make its appearance early in the season, but following damage caused by local hailstorms developed in considerable abundance. Loss from blight in the Greeley section amounted to approximately 10 per cent. Colorado grows a considerable quantity of seed and losses sustained to a succeeding crop as a result of the use of infected seed will probably be as great as to the 1934 crop.

Root rots were fairly general and common on beans but not very destructive. The dry root rot (Fusarium martii phaseoli), the most common root disease, was frequently isolated from plants in fields at Greeley, Colorado, grown under irrigation. Dry land beans were almost entirely free of root rots. Rhizoctonia solani was observed in a few cases. The losses from root rots in the State did not exceed 5 per cent.

Mosaic was common in fields of susceptible varieties.

A trace of bean rust (Uromyces phaseoli typica) occurred in one field of Kentucky Wonder late in the season.

WYOMING: Blight (Bacterium phaseoli) was common in many fields but caused severe damage in only a few. The amount of blight was less than normal.

Mosaic was prevalent on susceptible varieties, as for example the Stringless Green Refugee. Some alkali injury occurred in the general vicinity of Greybull.

IDAHO: Bean fields were visited only in the southern part of the State. In this region of the State the percentage of curly top was determined from actual counts to vary from 0.5 to 50.

Mosaic was prevalent on susceptible varieties.

Wilt, caused by Pythium butleri, was found in some abundance in one or two fields of Stringless Green Refugee. This disease is known to occur in Virginia, Colorado, and Idaho.

UTAH: Curly top was present in a small amount. Mosaic was prevalent in plantings of susceptible varieties.

PEA DISEASES

COLORADO: Root rots were probably the most common and destructive diseases of peas in the State. While in some fields 100 per cent of the plants were infected with Fusarium martii pisi, the damage was slight, apparently because the roots became infected after the plants were practically grown. Very little infection was found in fields grown only one or two years to peas. A root rot caused by Rhizoctonia solani was found occasionally on Austrian Winter Peas and to a less extent on the garden peas.

Mosaic was found occasionally on some of the large podded market garden types such as Dwarf Telephone and Stratagem, but caused no appreciable damage.

Blight (Bacterium pisi) was found scattered over the State, and caused some loss near Alamora and elsewhere in the southern part of the State; a trace of blight was found at Longmont. One hundred per cent infection was noted in some fields, but the crop loss did not exceed 5 per cent.

A wilt caused by Fusarium oxysporum aurantiacum was found scattered through a number of fields in different parts of the State.

There was a trace of Ascochyta blight (Ascochyta pisi) in a few fields.

Mildew (Erysiphe polygoni) was prevalent on peas in both the northern and southern parts of the State, especially during the latter part of the season.

WYOMING: Blight (Bacterium pisi) occurred on a large number of varieties grown experimentally on the Horticultural Field Station near Cheyenne. The disease developed rapidly following a hail storm. A trace was found in many fields in the pea growing sections of the State but there was very little loss.

Ascochyta blight (Ascochyta pisi) was common on many varieties at Cheyenne.

Root rot (Fusarium martii pisi) was common in the vicinity of Powell and Cody but caused only slight damage.

There was 5 to 10 per cent infection with mosaic in fields of Dwarf Telephone and Potlatch.

IDAHO: Root rot was found more abundant and destructive than any other disease. There was 100 per cent infection in some fields cultivated to peas for several years in succession. Some fields were reasonably free. Shortage of water for irrigation during the latter part of the season tended to aggravate the loss.

Streak (cause unknown) was found in a few fields of Perfection and Prince of Wales.

Wilt (Fusarium oxysporum aurantiacum and F. vasinfectum lutulatum) was more or less general in fields about St. Anthony and Lewisville. It occurred independently of or in connection with plants affected with root rot.

TOBACCO DISEASES IN KENTUCKY

Angular leaf spot (Bacterium angulatum). Heavy infection in plant beds throughout Burley section of State. One application of 3-4-50 Bordeaux one quart per square yard when plants were very small has given nearly perfect control for the third consecutive year in station plant beds. (W. D. Valleau. June 5)

Leaf spot (Colletotrichum destructivum). Tobacco plants in station plant beds, located on gently sloping ground below a closely pastured area in which red clover and several other legumes and grasses were growing, were heavily spotted when about four inches in diameter with a fungus. Isolations consistently gave a Colletotrichum which appears identical with C. destructivum. Because of frequent heavy rains the beds were flooded from time to time with water flowing over the pasture plants. The fungus did not seem to fruit on the tobacco leaves. (E. M. Johnson and W. D. Valleau. June 5)

CROWN ROT OF RED CLOVER IN KENTUCKY

Sclerotinia (presumably S. trifoliorum) is still active on clover. It has recently caused some stem rot well above the crowns. Wefts of the fungus can also be found on the clover stems. (W. D. Valleau. June 5)

SYCAMORE ANTHRACNOSE VERY PREVALENT THIS YEAR

Carl Hartley of the Division of Forest Pathology writes (June 3)

> "Sycamore anthracnose (Gnomonia veneta) is decidedly severe at Ellsberry, Missouri, Henryville, Indiana, along the railroad between Seymour, Indiana, and Cincinnati, and Cumberland, Maryland, and Parkersburg, West Virginia, or in other words, everywhere between Washington and the Mississippi River that I travelled through by daylight. In Indiana and eastward I paid considerable attention to the white oak also and saw no signs of the anthracnose on that host. The disease is also severe in nearby Maryland. Last year infection here was relatively light."

A note from R. J. Haskell, Extension Pathologist (June 7), also mentions the unusual prevalence of sycamore anthracnose in the District of Columbia, along the Potomac River in Maryland, and in the eastern panhandle of West Virginia.

THE WEATHER

Since the last discussion of the weather in the Reporter a spectacular change as regards precipitation has occurred, dramatized by the conversion of the persistent southwestern drought area from a region of dust storms into one of destructive floods. This change is shown graphically by the accompanying maps (figures 46 and 47) giving percentages of normal precipitation for April and May, and is discussed in the following brief summary furnished by the Department of Agriculture Press Service (June 7):

The moisture supply for crops in the United States is generally favorable for the first time in two years, according to W. A. Mattice of the Weather Bureau. May rainfall in the Southwest - running from normal to twice normal - finally relieved the drought that had persisted from southwestern Kansas and southeastern Colorado to Texas and New Mexico since 1930.

The Southwest has not yet regained its lost subsoil moisture, Mr. Mattice says. Only long-continued rains can restore that. Nor is the subsoil moisture entirely replenished in the Upper Mississippi Valley and in eastern Montana. Moisture probably has penetrated to the subsoil

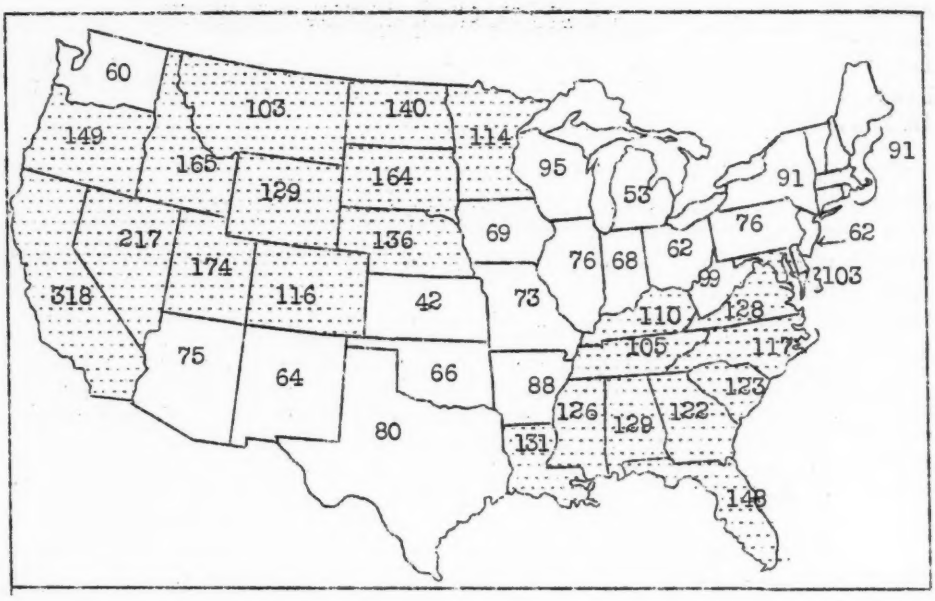

Figure 46. Percentage departure from the normal precipitation, April, 1935. Shaded, above normal.

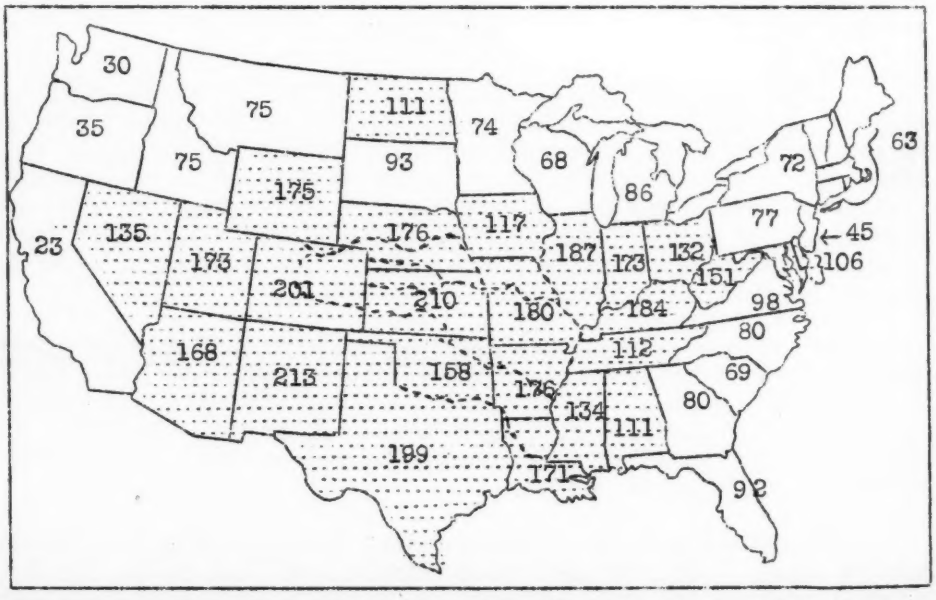

Figure 47. Percentage departure from the normal precipitation, May, 1935. Shaded, above normal, - - - - rivers in flood.

in the Great Plains area, however. In May this year many of the drought areas of last year had much more than normal or average rainfall. For example, North Platte, Nebraska, had only 21 percent of its normal rainfall in May, 1934, and about 158 percent normal in May, 1935; Dodge City, Kansas, with 34 percent in May, 1934, had about 164 percent in May, 1935.

May this year was a very moist month over the entire country east of the Rockies, except in part of the Upper Mississippi Valley and in some sections of Montana. Because of heavy precipitation, several rivers reached the flood stage. The Weather Bureau issued flood warnings along the Arkansas River in Colorado, Kansas and Arkansas, along the Platte River in Colorado and Nebraska, along the Kansas River and tributaries, along the Missouri River in Missouri, along the Mississippi from below Keokuk, and along the Red River in Texas and Louisiana. Part of the Ohio Valley, as well as the lower Mississippi Valley, was extremely wet. The Pacific Coast States did not share in the abundant rainfall. Scarcely any rain fell in May over a large part of California. Eastern Washington and Oregon also were exceedingly dry.

May was generally cooler than normal east of the Rockies, except along the Gulf Coast and in some parts of the North. The temperature was 4 or 5 degrees below normal in the Great Plains, in the Northwest, and in the Northeast. Freezing temperatures, however, were not common. They were confined to the Northwest, the extreme Northeast, and the higher elevations in the central Appalachian region. In the Pacific Coast States it was somewhat warmer than normal - not more than 3 degrees. Above normal temperatures were reported also from parts of the Southeast, especially Florida.